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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joshua D. Karnes

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EXAMINER

VORTMAN, ANATOLY

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,733

Applicant(s)

KARNES ET AL.

Examiner

Anatoly Vortman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003 (RCE and Amendment).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21-35, 37-70 and 73-91 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 21-35, 37-70 and 73-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachments

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Amendment

1. By response filed on 08/29/03, claims 1, 33, 37, 38, 69, and 73-75 have been amended. Claims 1-19, 21-35, 37-70, and 73-91 are pending in the instant application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 49, 59-70, 73-78, and 87-91, are rejected under 35 U.S.C. 102(b) as being anticipated by US/4,441,093 to Okazaki.

Regarding claim 49, Okazaki disclosed a fuse assembly (Fig. 5, 6) comprising: a fuse element (12) prepared in a substantially non-linear form, wherein at least a portion of the fuse element (12) is capable of experiencing arcing (inherently) as a result of excessive current flowing through the fuse element (12); means (a portion (15) of a dielectric material (14, 15)) for increasing a dielectric separation to impede the arcing (inherently), wherein said means (15) for increasing said dielectric separation is separated from said fuse element (12) by a space

(accommodating the portion (14) of the dielectric material) along a length of said fuse element (12).

Regarding claim 68, Okazaki disclosed that non-linear form of the fuse element (12) is substantially a curve (Fig. 5).

Regarding claims 59 and 60, Okazaki disclosed that an excessive current is causing an opening in the fuse element (12) due to the meltdown of at least the portion (16) of said fuse element (12), wherein the arc is formed between the ends of said opening (inherently).

Regarding claims 61-64, Okazaki disclosed means comprising a portion (15) of dielectric material (14, 15) positioned between an area bounded by the prepared fuse element (12) and a line connecting the at least two end terminals (11) for increasing a dielectric separation to impede the arcing by forcing the arcing (inherently) to follow the path along the curve (of the fuse element (12)), wherein the at least a portion (15) of the dielectric material (14, 15) comprises a superior dielectric material.

Regarding claims 65-67, Okazaki disclosed that the arcing causes formation of a carbon conductive path (inherently) along a surface of the at least portion of the dielectric material (14) that reduces the insulating value of the dielectric material (inherently).

Regarding claims 69, 70, 73-78, and 87-91, the method steps recited in the claims are inherently necessitated by the device structure as disclosed by Okazaki.

Claim Rejections - 35 USC § 103

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-19, 21-35, 37-48, 50-58, and 71-86, are rejected under 35 U.S.C. 103(a) as being unpatentable over US/4,441,093 to Okazaki in view of US/5,572,181 to Kiryu et al., (Kiryu).

Regarding claim 1 Okazaki disclosed a fuse assembly (Fig. 5, 6) comprising: a fuse element (12) prepared in a substantially non-linear form, the fuse element comprising at least two terminals (11), the at least two terminals comprising a first terminal and a second terminal; and a fuse body comprising a dielectric material (14,15) adapted to substantially enclose the fuse element (12) between the at least two end terminals (11), wherein at least a portion (15) of the dielectric material (14, 15) is positioned between an area bounded by said fuse element (12) in a substantially non-linear form and a line connecting two ends of the fuse element (12) to impede arcing across the fuse element (12) (inherently), and the fuse element (12) is separated from said portion of the dielectric material (15) by a space (accommodating a portion (14) of the dielectric material) along a length of said fuse element (12), but did not disclose that said end terminals (11) are connected to the end caps.

Kiryu disclosed a fuse assembly (Fig. 3), wherein a fuse element (3) is connected to the two end caps (2) for the purpose of the convenient installation in a power distribution conductor on a circuit board (column 6, lines 48+).

Since the inventions of Okazaki and of Kiryu are from the same field of endeavor (electrical fuses), the purpose of the end caps disclosed by Kiryu would be recognized in the invention of Okazaki.

It would have been obvious to a person of ordinary skill in the fuse art at the time the invention was made to provide said fuse assembly of Okazaki with the end caps as taught by Kiryu in order to adapt said fuse assembly of Okazaki for a convenient installation in a power distribution conductor on a circuit board.

Regarding claim 2, Okazaki disclosed that non-linear form of the fuse element (12) is substantially a curve (Fig. 5).

Regarding claims 3, 4, and 9-14, Okazaki disclosed means comprising a portion (15) of a superior dielectric material positioned between an area bounded by the prepared fuse element (12) and a line connecting the at least two end terminals (11) for increasing a dielectric separation, the fuse element (12) is capable of experiencing arcing as a result of an opening (inherently), wherein said portion of the dielectric material is impeding the arcing by forcing the arcing (inherently) to follow the path along the curve (of the fuse element (12)), (Fig. 5, 6).

Regarding claim 5, Okazaki disclosed that the path of arcing would be consistent (inherently) with the shape of the at least a portion of dielectric material (15), (Fig. 5, 6).

Regarding claims 6-8, the arcing will inherently cause formation of a carbon conductive path along a surface of the at least portion of the dielectric material (14) that inherently will reduce the insulating value of the dielectric material.

Regarding claims 15-17 Okazaki disclosed that an excessive current is causing an opening in the fuse element (12) due to the meltdown of at least the portion (16) of said fuse element (12), wherein the arc is formed between the ends of said opening (inherently).

Regarding claims 50, 51, and 53, Okazaki disclosed all of the claims limitations as apply to claim 49 and further that the a fuse assembly comprising: a fuse element (12) prepared in a substantially non-linear form, the fuse element comprising at least two terminals (11), the at least two terminals comprising a first terminal and a second terminal; and a fuse body comprising a dielectric material (14, 15) adapted to substantially enclose the fuse element (12) between the at least two end terminals (11), but did not disclose (regarding claim 50) that said terminals (11) are connected to the end caps.

Kiryu disclosed a fuse assembly (Fig. 3), wherein a fuse element (3) is connected to the two end caps (2) for the purpose of the convenient installation in a power distribution conductor on a circuit board (column 6, lines 48+).

Since the inventions of Okazaki and of Kiryu are from the same field of endeavor (electrical fuses), the purpose of the end caps disclosed by Kiryu would be recognized in the invention of Okazaki.

It would have been obvious to a person of ordinary skill in the fuse art at the time the invention was made to provide said fuse assembly of Okazaki with the end caps as taught by Kiryu in order to adapt said fuse assembly of Okazaki for a convenient installation in a power distribution conductor on a circuit board.

Regarding the functional recitations of claim 53 that "the fuse element being capable of experiencing arcing as a result of an opening being created in at least a portion of the fuse

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element, the opening having two ends, the dielectric material forces arcing between the two the two ends to traverse a path consistent with the non-linear form", it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138. Therefore, the aforementioned functional recitation has not been given patentable weight.

Also, the fuse element of Okazaki would inherently behave upon opening in exactly the same manner as the fuse element of the present invention, since structurally the fuse assemblies of the present invention and of Okazaki are identical.

Regarding claims 52, 54, and 56, Okazaki disclosed means comprising a portion (15) of superior dielectric material (14, 15) positioned between an area bounded by the prepared fuse element (12) and a line connecting the at least two end terminals (11) for increasing a dielectric separation to impede the arcing by forcing the arcing (inherently) to follow the path along the curve (of the fuse element (12)).

Regarding claims 55, 57, and 58, the arcing inherently will cause the formation of a carbon conductive path along a surface of the at least portion (14) of the dielectric material (14, 15) that inherently will reduce the insulating value of the dielectric material.

Regarding claims 18, 19, 21-35, 37-48, and 79-86, the method steps recited in the claims are inherently necessitated by the device structure as disclosed by Okazaki in view of Kiryu.

Response to Arguments

6. Contrary to the Applicant's position that "Okazaki fails to teach, show or suggest, "means for increasing a dielectric separation to impede arcing" (p. 15, lines 14, 15; p.16, lines 1+ of the Applicant's response), the Examiner would like to reiterate, that Okazaki had disclosed (Fig. 5, 6) a fuse structure identical to the fuse structure as claimed in the instant application, wherein said means (15) for impeding the arcing is an equivalent to the means for impeding the arcing as described in the specification of the instant application (see p.9, lines 13-20 of the specification of the instant application), i.e. the dielectric (15) of Okazaki, forms a non-linear path for the arc, thus increasing the distance the arc is forced to travel and inherently impeding the arcing.

Regarding the Applicant's position that there is no motivation to combine the references of (Okazaki and Kiryu) (p. 16, 17 of the response), the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. *In re Nomiya*, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA) 1969. In this case, since the inventions of Okazaki and of Kiryu are from the same field of endeavor (electrical fuses), the purpose of the end caps disclosed by Kiryu would be recognized in the invention of Okazaki and a person of ordinary skill in the fuse art at the time the invention was made would definitely be motivated to provide said fuse assembly of Okazaki

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with the end caps as taught by Kiryu in order to adapt said fuse assembly of Okazaki for a convenient installation in a power distribution conductor on a circuit board. Indeed, the disclosure of the Kiryu patent taken as a whole would definitely suggest to the person of ordinary skill in the fuse art to perform the modification of Okazaki device as stated above.

Regarding the method claim 18, contrary to the Applicant's position that "no "steps" are recited within claim 18" (p. 17, line 27 of the Applicant's response), the Examiner believes that claim 18 recites nothing else than method steps of making the device (a fuse), e.g.: "adjusting", "coupling", "enclosing", etc.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 703-308-7824. The examiner can normally be reached on Monday-Friday, between 9:30am and 6:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg can be reached on 703-308-4815. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Anatoly Vortman
Primary Examiner
Art Unit 2835

A.V.

